REPORT OF THE CHIEF OF THE BUREAU OF HOME ECONOMICS

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF HOME ECONOMICS,
Washington, D. C., August 31, 1932.

SIR: I present herewith the report of the Bureau of Home Economics for the fiscal year ended June 30, 1932.

LOUISE STANLEY, *Chief.*

Hon. ARTHUR M. HYDE,
Secretary of Agriculture.

During the past year special demands have been made on this bureau by home makers and relief agencies for advice in directing family expenditures so as to help maintain an adequate standard of living in the face of falling incomes and by producers for information to help in better adjustment of production programs to demand and in the more orderly marketing of their products. Inadequate living standards not only result in lowered individual efficiency, but one-sided demand interferes with a balanced production program and tends to increase maladjustments.

In times of economic depression food in its relation to health and morale and its place in the family budget become one of our most acute economic and social questions. When the economic crisis grew to national proportions the Department of Agriculture expanded the service which it had inaugurated on low-cost diets during the drought period, so as to take care of the emergency situation. Stressing as they did the use of diets to prevent pellagra, malnutrition, and other ill effects of restricted diet, these recommendations have unquestionably done much to prevent more widespread malnutrition and have kept standards for balanced diet constantly before the consuming public. Over a million copies of bulletins and charts on low-cost food for the family have been distributed at the direct request of individuals, relief agencies, and agricultural extension workers. Many welfare organizations have reprinted the material for even wider use. In addition a weekly press release called "The Market Basket" and frequent radio talks point out peaks of production for eggs, fresh fruits, and vegetables, and other nutritionally valuable foods subject to seasonal price fluctuations. The service thus operates to the mutual advantage of consumers and producers.

Throughout this low-cost food service the scientific facts of nutrition are stated in such simple, practical terms that any woman choosing food for the family and any relief agency dispersing food supplies can put them to immediate use. Standards for protein, calories, minerals, and vitamins in the diet for families of different sizes are translated into definite quantities of milk and other dairy products; cereals; meat, eggs, and other foods of that type; fats; and sweets. Next the food dollar is divided, and proportions are assigned to each of these food groups. Thus individuals or relief agencies keeping a record of money spent can quickly check their expenditures against the standard for the balanced diet. Finally, meal plans are suggested, with simple appetizing ways of serving the foods listed, and information is given on how to get full benefit from the leafy vegetables, fruits, tomatoes, and other "protective" foods.

This service was based on the fundamental facts brought together by the research studies of the bureau. These studies have continued as hitherto under three divisions: Foods and nutrition, economics, and textiles and clothing. In addition to the fundamental research program, each division has made its contribution to the emergency program.

FOODS AND NUTRITION

FOOD COMPOSITION

Authentic data on food composition and vitamin content of specific food materials have made possible the interpretation of food standards in terms of specific foods and the adjustment of the food needs to available supplies. During the past year, in cooperation with the Bureau of Dairy Industry, the bureau has compiled data on composition of milks and milk products for publication. A chart showing foods rich in iron has been issued to meet the demands from extension workers and nutrition teachers for graphic material that will aid people in choosing a diet adequate in this mineral extremely important to health. Following the completion of work on analyses of cooked foods in the bulletin on Midday Meals for Groups of Preschool Children in Day Nurseries and Nursery Schools, prepared in cooperation with the Merrill-Palmer School in Detroit, special attention has been given to chemical data on dried fruits and vegetables and meats.

NUTRITION STUDIES

Results of vitamin A, B, C, and G assays on two varieties of grapes typical of those grown in California (Sultanina (Thompson Seedless) and Malaga), on Concord grapes, a typical eastern variety, and on two brands of commercial grape juice were published. These data indicated that Sultaninas and Malagas contain appreciable amounts of vitamins A, B, and C. The edible portion of Concord grapes contains very small amounts of vitamins A and B and practically no vitamins C and G. The fact that the skins of the Concord grapes were discarded following the normal table practice, while the Sultaninas and Malagas were used whole in the feeding experiments may account for the differences in vitamin content reported. The two brands of commercial grape juice are practically devoid of the four vitamins for which tests were made.

Assays to determine the relative vitamin content of three varieties of spinach were completed and published. The results show that there is little difference in the vitamin A, B, and C content of the three varieties under test, although they represent extremes of leaf type and of color, varying from broad, deeply wrinkled leaves dark green in color to smooth spear-shaped leaves only slightly crumpled near the base and somewhat yellow green in color.

The study of the physiological effects of a lack of vitamin G in the diet of the rat has been continued. The findings have been evaluated and summarized so that the behavior of a rat of known age and history kept on a vitamin G free diet may be predicted with assurance. This information is essential to further studies on vitamin G, a vitamin of great importance not only in pellagra prevention but as a factor in general health and longevity. Considerable data on the occurrence of vitamin G in common foods were also obtained, and more accurate values for the vitamin B and vitamin G content of rice polish.

As part of a series of investigations on vitamin losses during cooking, broccoli was studied. This vegetable is unique in that it comprises stems, leaves, and flowers. Broccoli was found to be a good source of vitamin B, comparing favorably with spinach in this respect, and it also contains appreciable amounts of vitamin G. The cooked product contained 50 per cent less vitamin B and considerably less vitamin G than the equivalent fresh sample.

The study of the nutritive value of eggs has been undertaken in cooperation with other bureaus of the department to obtain information needed by both producer and consumer. Eggs from experimental flocks are tested to find how factors in production affect nutritive value. To date the work has centered on the relation between the source of vitamin D in the hen's diet and the vitamin D content of the egg. The three most important findings are: (1) At low levels of feeding the hen seems to be able to utilize the vitamin D from cod-liver oil more efficiently than that from viosterol. Eggs from hens that received 2 per cent of viosterol 5 D contained only slightly more vitamin D than eggs from hens fed 2 per cent cod-liver oil; (2) there was a very definite limit to the ability of the hen to put vitamin D into the egg when cod-liver oil was the dietary source, i. e., eggs from hens on diets containing 4 and 6 per cent of cod-liver oil contained no more vitamin D than did eggs from hens that had 2 per cent of oil; and (3) when increasing amounts of vitamin D were furnished to the hens in the form of viosterol the vitamin D potency of the eggs was correspondingly greater. The highest value obtained was much greater than any of the values obtained with cod-liver oil as the source of

vitamin D. As stated above, percentages of cod-liver oil greater than 2 per cent did not enable the hen to produce eggs of correspondingly greater vitamin D potency. In the case of viosterol no such limit was reached with the amounts used.

FOOD UTILIZATION

The production of a quality to meet consumer demand and directions to the consumer for selection and satisfactory use of farm products for food are important factors in the orderly marketing of farm products. In cooperation with producers and distributors, quality studies are being undertaken, and the results are made available to consumers in practical publications on the selection and use of different foods.

In cooperation with the Bureau of Animal Industry, the Bureau of Agricultural Economics, and 26 State experiment stations, the study of meat quality has been continued.

Data on the edible quality of 1,984 legs of lamb supplied by the cooperating agencies have been tabulated and are being correlated with facts on breed, age, sex, ration, grade of animal and carcass, cutting yields of meat, color of meat, and tenderness by mechanical test. Variations in cooking losses and in the rate of heat penetration for legs of lamb of the same weight cooked in the same way are not only matters of interest to the consumer but also a guide to the producer as to the most satisfactory age and finish to market lambs. It is evident that carcass grade and the degree of finish of a leg of lamb influence shrinkage and cooking time, important factors in quality. Further work on the effect of removing the fell from a leg of lamb confirmed previous findings, namely, that cooking time and shrinkage are increased when the fell is removed, but palatability does not appear to be definitely affected. Analysis of data on ripening of lamb showed a definite and fairly rapid increase in tenderness up to 10 days after slaughtering. From 10 to 24 days there was some, but much less, increase. Of special interest to producers is the finding that some lamb was tender immediately after killing, while ripening failed to tender other samples. Study of the production factors back of this tenderness will indicate how the quality of lamb may be improved.

Figures obtained from cooking pork loins of varying degree of thickness of fat covering showed that the heavier cover of fat protected the meat from loss by evaporation and increased fat loss in drippings without much change in total loss.

In order to make more satisfactory use of certain less tender cuts methods of slow roasting at lower temperatures have been tried. While the results seem to show that tenderness is increased by longer cooking at low temperature as compared with more rapid cooking at a higher temperature, there are insufficient data as yet to justify final conclusions.

A method developed for testing egg flavor was utilized in cooperation with the Bureau of Chemistry and Soils to study change in flavor of eggs after different methods of processing and storing.

A beginning was made in the standardization of a method to determine the leavening power of eggs in cookery. This will be used to test variations in the leavening power of eggs from hens on different diets and under different conditions of environment.

Tests were continued on eight of the more important domestic varieties of rice. Stored samples of these rices from the crop of 1930 were tested for cooking quality. Under laboratory conditions of storage, the quality was less desirable the second year than the first. The kernels tended to break more during cooking. the cooked rice was more sticky, and some varieties darkened in color. Many of the grains appeared to be checked or cracked transversely.

A method was developed for making and comparing the thickening power of starches from different sources when used in puddings and sauces. Preliminary results show that in addition to the difference in behavior of soft and hard wheat, potato, and corn starches there is a wide difference in the viscosity of starch from the same source, depending on the method of handling.

Recipes for the use of whole wheat and other cereals in low-cost diets have been developed at the request of relief agencies.

The study of potato quality has been continued in cooperation with the Bureaus of Plant Industry and Chemistry and Soils. The table quality of 106 seedlings was studied to determine the best varieties for breeding purposes. A study of one variety, the Katahdin, grown in 46 localities, showed wide differences in quality as a result of environment. A correlation of specific factors in production with table quality is now being made.

To test the influence of temperature and time of storage on quality change, four standard varieties stored at 32°, 36°, 40°, 50°, and 60° F. were judged for cooking quality by standard methods before storage and at three 6-week intervals during storage. All potatoes stored at temperatures below 50° were unsatisfactory (yellow in color, of soggy texture, and of poor frying quality), while those stored at 50° and 60° were desirable. The quality decreased when the storage temperature was below 50° and when the storage period was long. A preliminary study of the blackening of potatoes showed that it could be partly prevented by soaking or cooking the potatoes in slightly acidified water. Further studies are planned to determine the chemical cause.

At the request of the Bureau of Plant Industry tests were made to determine possible uses of bamboo sprouts in the diet. In the raw form the sprouts contain an acrid substance which must be removed or destroyed before the sprouts can be eaten. This substance can be removed by a short precooking, and the sprouts are then useful to furnish crispness in salads, chowders, chop sueys, and other dishes. Directions for canning bamboo sprouts have been prepared.

A beginning was made in a study of the losses occurring in food value when leafy vegetables are cooked by different methods.

During the past year demands have been extremely heavy for information on different aspects of food preservation, by reason of the emphasis given to live-at-home programs in many States and the save-the-surplus campaigns in cities with home and community garden projects. Printed directions for the home canning of fruits and vegetables have been furnished in so far as supplies permitted. Special publicity by press and radio was given on the necessity for proper sterilization of the nonacid vegetables particularly, not only to cut down waste through spoilage but also to reduce to a minimum the chances of types of spoilage dangerous to health. The work on methods of canning pork and chicken was continued, and the meat, packed in different ways, sterilized at different times and temperatures, is being checked bacteriologically and for quality of product.

An experimental study on the canning of rabbit meat, in cooperation with the Bureau of Biological Survey, showed that precooking the rabbit in water is desirable as a preliminary to canning.

The study on jellies was continued. The juices more frequently used in jelly are being collected over a period of years. Variations in concentration, viscosity, acidity, and the jell strength of these juices which occur from year to year explain the differences in their behavior in jelly making. The influence of canning and storage of the juice on the quality of the jelly is being studied.

ECONOMIC STUDIES

Economic studies continued under four major heads: Standards of living, food-consumption trends, family budgets and purchasing, and housekeeping efficiency. These studies are designed primarily to aid home makers in the wise use of the family's resources and in improving standards of living. The information they provide on the consumption habits of the population is of value also in adjusting production and distribution to meet consumer demand.

STANDARDS OF LIVING

The cooperative studies of standards of living in the southern Appalachian highlands have been continued. The field work in the investigation in Grayson County, Va., begun in June, 1931, in cooperation with the Bureau of Agricultural Economics and the Virginia Agricultural Experiment Station, was completed. Detailed information was obtained on the standard of living of 340 farm families representative of this section in the Appalachians. The results of this survey are being analyzed for publication.

The statistics available on standards of living in all the counties in the southern Appalachian highlands have been assembled and prepared for presentation in a graphic summary of information on social and economic conditions in this area. This study was undertaken as a cooperative project with the Bureau of Agricultural Economics, the Forest Service, the Office of Education of the Department of the Interior, and the agricultural experiment stations.

A comparison of the account and schedule methods of obtaining data on family living is ready for publication. The results will be valuable in future studies of the costs and standards of living of the population made by Govern-

ment or other research agencies. The major problem in planning such investigations is that of securing reliable data from a large number of families. This study indicates the extent to which the estimates obtained by the schedule method must be supplemented by actual accounts kept by the housewife.

In cooperation with the committee on household management of the President's Conference on Home Building and Home Ownership, a report on budgeting for housing and home ownership was prepared for publication. Assistance was also given in the preparation of the reports of two other committees of this conference.

FOOD-CONSUMPTION TRENDS

Studies of the food consumed by various groups of the population have been continued. A report on the food consumption of 2,400 representative farm families in nine States was completed. This study, the data of which were collected in cooperation with the Bureau of Agricultural Economics and various State agencies, presents estimates obtained by the schedule method of the quantity and cost of different foods purchased during the year and furnished by the farm. Similar estimates were secured in 1930 from families living on marginal farms, as part of the cooperative study of standards of living in the Appalachian highlands of eastern Kentucky. To supplement this information, accurate records of food consumption were obtained from a selected group of these Kentucky families during the summer of 1931. The data from these dietary studies are analyzed in terms of the nutritive value, adequacy, and cost of the diet and of the quantities of various foods consumed. This information provides the basis for educational work in food purchasing and in raising and preserving food for home use.

A study of the cost and nutritive value of food eaten by groups of children of preschool age and by individual children has been started, in cooperation with the National Child Research Center. The adequacy of the food consumed is determined both by accepted nutritional standards and by the health records of the children. The results of these studies will be used by nursery schools and other agencies caring for small children, as well as by mothers themselves.

A summary of food consumption trends in the United States as shown by available dietary studies, both published and unpublished, is now being made. These figures will throw light on the adequacy and economy of the food customarily used by various economic and occupational groups of the population and will indicate the changes which are taking place in the demand for different foods.

FAMILY BUDGETS AND PURCHASING

The preparation of practical material on family budgets and on the selection and purchasing of food has been continued to meet the great demand for such material during the present economic depression. Two additional publications on low-cost diets have been issued. One of these, a pamphlet, Emergency Food Relief and Child Health, was prepared in cooperation with the Children's Bureau of the United States Department of Labor, to aid welfare agencies in administering relief. The other, a popular illustrated folder, Getting the Most for Your Food Money, was prepared in cooperation with the Extension Service.

A bulletin on the family's food budget is now in preparation, giving practical suggestions on planning adequate diets and on economical methods of buying food. This publication will be adapted to families of moderate means as well as to those with low incomes. A bulletin is also in progress on budgets for families of limited means, giving detailed suggestions on spending the family income. This material is being prepared in cooperation with the National Conference of Social Work, and will be used by welfare agencies and extension workers in helping families to make the most of their resources.

In addition to the preparation of such material, assistance was given to a large number of agencies and individuals on their budgeting and purchasing problems. Lectures were given by members of the staff to groups under the auspices of the American Red Cross, the Washington Council of Social Agencies, the Washington Community Center, and near-by universities. Several relief organizations were given special help, and hundreds of individuals were served through correspondence. The weekly news release, The Market Basket, was continued throughout the year, as a means of aiding housewives in the wise selection and purchasing of food.

HOUSEKEEPING EFFICIENCY STUDIES

Studies of the work now carried on in the home and of methods of increasing its efficiency have been continued. The comparative costs of doing various tasks in the home and of using commercial products or services is being investigated, resuming a small study previously undertaken and discontinued owing to lack of funds. Assistance has been given during the year in the work of several committees of the President's Conference on Home Building and Home Ownership.

TEXTILES AND CLOTHING

On account of the present emergency, special emphasis was given in textile investigations to those dealing with more effective and extended uses of American-grown cotton and wool. In cooperation with other bureaus of the department studies are being made of the reaction of different grades of cotton and wool to actual use, in order that improvements in quality and changes in production programs may be recommended on the basis of the value of these grades to consumers. The need for making a wise use of these textiles is kept before home makers by means of specific suggestions of good types of clothing and house furnishings for which cotton and wool are suitable. Also, the attention of manufacturers is directed to new types of fabrics which will meet specific needs of consumers.

COTTON STUDIES

The cooperative study with the Bureau of Agricultural Economics on the wearing qualities of three different grades of 1-inch American upland cotton (Middling, Good Ordinary, and Strict Good Middling) when manufactured into sheeting is practically completed. The sheets of Good Ordinary cotton were too worn for further use after being used and laundered two hundred and twelve times. Those made from the other grades are being removed after being used and laundered approximately two hundred and forty times. Changes in the physical properties of the fabrics during wear have been followed by means of laboratory tests on breaking strength, bursting strength, and weight. The chemical changes were studied by viscosity determinations, methylene-blue absorption measurements, and copper number tests made at intervals during the life of the sheets. The results of the chemical tests, the physical tests, and the tests of actual wear show exact correlation for each grade of fiber. In all cases the sheets made of Middling and Strict Good Middling cotton were superior to those made of Good Ordinary. Since this is the first experiment of its kind on the relation of fiber grade to wearing quality of the finished fabric, further study is needed to show whether these results hold when yarn twist, thread count, and other details of fabric construction differ.

New sheetings of known grades of cotton have also been used for studies of the effect of different ironing temperatures on cotton fabrics. The temperature and the moisture content of the fabric were controlled, and the pressure between the shoe and the roll maintained between 1 and 1½ pounds per square inch. Deterioration is determined by color tests and changes in tensile strength and chemical composition.

The modified-spectrophotometric method used for the color tests involved determinations of the amount of light reflected from the cloth in the red, yellow, green, blue, and violet portions of the spectrum. By means of the blue-violet light emitted from a mercury arc lamp it was possible to detect changes in the fabric samples for ironing temperatures, at least 65° C. lower than those required to change the tensile strength of the cloth. When the surface of the revolving padded roll, just before it makes contact with the heated metallic shoe, has a temperature of 38° to 40°, changes in the amount of blue-violet light reflected by the sheeting samples may be noted with the heated metal surface as low as 245° to 247°. Slight indications of chemical damage in the ironed sheets have been obtained for temperatures as low as 257°. The first apparent loss in tensile strength occurred at temperatures between 310° and 325°. If several thicknesses of the fabrics ironed at this higher temperature range are superimposed, their changed color is readily apparent in ordinary daylight.

When the roll, which was padded with regulation knit-cotton padding, was allowed to turn until its surface attained a temperature in the range of 120° to 130° C., the ironed samples showed indications of damage for shoe-temperatures at least 25° lower than those already stated. With the hotter roll, damaging effects due to any hard packing of the padding were especially noticeable, particularly when the same degree of contact was maintained with the shoe.

A comparison of the effect of high ironing temperatures upon sheets in actual use was made for one group of sheeting materials by means of the changed reflection for the blue-violet light. For the first 60 per cent of their period of use these materials gave the same resistance to high temperatures as was given by unused material with the same method of measurement. During the last third of their useful life, however, a decreased resistance was noted even for samples which had not been changed in weight and thickness.

WOOL INVESTIGATIONS

The study of the durability of different kinds of wool when used in blankets is being continued in cooperation with the Bureau of Animal Industry. Some of the blankets are being given only a commercial laundering test in order to decrease the time required for the study. Others are being given both wear and laundering tests at a veterans' hospital in Washington. An abrasion apparatus has been built so that a laboratory index of wear can also be obtained. In connection with these investigations, a bibliography entitled "Selected List of References on the Physical Testing of Fabrics" was compiled.

A study of chemical methods of evaluating wearing qualities of woolen materials is in progress, incident to the laundering studies. Washable woolens such as blankets and flannels are made from such lightly twisted yarns that their initial tensile strength is low, and the usual mechanical tests can not be made a sensitive index of deterioration. Latent damage due to faults in methods of wet processing in manufacture or laundering can be measured only by chemical means. The methods being investigated include colorimetric tests of scale damage, change in sulphur content, and change in nitrogen content.

SIZING STUDIES

The finishing of cotton fabrics both in the mill and in laundering has an important bearing on the satisfactory use of this fiber. Studies have been made on the relative value of certain starches and other sizing ingredients. Such information is also important from the standpoint of the use to be made of the surplus farm products from which starch can be produced. The cornstarch production is completely meeting domestic demand. However, in 1931 this country used 18,304,625 pounds of imported potato starch in addition to that of domestic production. Although the United States raised 1,250,000,000 pounds of rice, practically no rice starch is produced here, and 1,068,774 pounds of rice starch were imported.

Experiments in our laboratories show that rice starch has the greatest penetrating power into cotton fabrics of any of the common starches, although it has less stiffening power than some of the others. Its fine granules also give a delicate satinlike finish. All these properties make it valuable for fabrics requiring a penetrating size and a soft fine finish. Potato starch also gives a less stiff finish. It has a very large granule and is useful when a less penetrating starch is wanted.

Experiments also show that humidity affects these starches to different extents, and the parts of the country in which the fabric is to be used should be taken into account when a starch is chosen. The effect of the addition of various fats and other materials commonly added to sizing mixtures has been determined and the results published in technical articles.

The value of some of the more uncommon starches has also been investigated. For example, the properties of starch extracted from the dasheen, a variety of taro, have been determined. These plants have been grown commercially in the Southern States since 1913, but only a limited number of uses has been found for them. The finish produced by this starch is firm and smooth, somewhat resembling that produced by rice starch.

HOUSE FURNISHINGS

Efforts are being made to devise new and valuable uses for cotton in house furnishings and to interest home makers in increasing their use of American-grown fibers wherever such increase is legitimate. Inexpensive cotton fabrics suitable for use in making handmade floor coverings were investigated, since this home industry is proving profitable to rural women. The 1931 reports from State extension workers show that in 19 States a total of 4,817 rugs were made under the direction of the Extension Service. Undoubtedly, large numbers were made without supervision by women taught in extension classes during previous years. Many of these rugs were sold as a means of adding

to family incomes, at prices varying from $10 to $100 per rug. Two rural women report making over $500 in this way.

In view of the economic importance of this home industry, as well as the aspects of cotton utilization, study was made of foundation fabrics and designs. Two of the cotton fabrics investigated are recommended as more durable foundation material than the burlap made of imported jute. The new cotton fabric developed in cooperation with the Bureau of Agricultural Economics was described in a technical paper entitled "Cotton Fabrics Suitable for Hooked Rug Foundations" and published as a joint contribution from the two bureaus. Illustrative material describing this new use for cotton and the making of these rugs was supplied the Office of Cooperative Extension Work.

With the spread of unemployment, demands increased for suggestions on making homes more attractive with a minimum of expense. A film strip on living-room arrangement was prepared in cooperation with the Office of Cooperative Extension Work, an accompanying syllabus, showing how comfort and good taste may be achieved at very small cash outlay.

CLOTHING

Four traveling exhibits of children's clothing are being sent over the country to demonstrate the use of suitable cottons and wools in new designs which give maximum comfort and convenience and are in accord with modern ideas on child training. This number of exhibits enables the bureau to meet about one-half of the requests which come from extension workers, universities, public-health clinics, parent-education classes, garment manufacturers, and merchandising departments of retail stores. The exhibits have been displayed in all States except one, and according to reports have been viewed by 60,000 interested persons, many of whom have immediately adopted the designs for their own children's clothing. Furthermore, extension groups in several States made up duplicate sets of the garments, thus keeping more permanently before the public our suggestions for use of fabrics and our new garment designs.

Manufacturers of commercial patterns show an increasing interest in this clothing work. There are now eight commercial companies making patterns for 29 designs developed in the bureau. Though manufacturers of ready-to-wear garments are not venturing on new lines at present, they give constant evidence of interest in this type of hygienic clothing. Prominent retail stores used the exhibits in merchandise training and as a guide to their buyers.

Improvements have been made in both the design and construction of several garments previously developed for preschool children. At the request of a Washington hospital, a garment for convalescent children was devised and is now in use there. In cooperation with the Florence Crittenton Home in Washington and with pediatricians, nurses, and mothers in various sections of the United States, infants' clothes were studied and new designs worked out to permit maximum comfort for the baby and convenience in dressing. Economy of material and of time necessary for construction and care of the garments was considered. Two little known cotton fabrics were tested in certain garments for infants and found satisfactory. Their potential use for this purpose was pointed out to various manufacturers.

INFORMATION SERVICES

Scientific research falls far short of the purpose for which it is conducted unless paralleled by an information service constantly interpreting the results in terms the general public understands. This is particularly true of home-economics research, dealing as it does with the use of family income and the choosing and use of foodstuffs, textiles, and other materials by the ultimate consumer.

During the past year results of the studies described were disseminated through printed bulletins, popular and technical, through articles for trade and professional journals and the press, and by exhibits and radio. The volume of material was similar to that in other years, but the emphasis was in the majority of cases on the economic situation, for heavy demands came from both farm and city women for help in planning low-cost diets and meeting other circumstances arising from the economic crisis. In this emergency, as during the World War, the whole fund of home-economics information accumulated by years of research was turned to immediate and practical use.

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